IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Narayan Sundararajan et al.	Assignee: Intel Corporation
Application No.: 10/815,264	Confirmation No.: 7476
Filed: March 31, 2004	Art Unit: 1634
For: MICROFLUIDIC APPARATUS, SYSTEMS, AND METHODS FOR PERFORMING MOLECULAR REACTIONS	Examiner: S. L. Bausch

DECLARATION OF DR. SELENA CHAN UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Dr. Selena Chan, declares under penalty of perjury under the laws of the United States of America as follows:

(1) I have received a Ph.D. in Electrical and Computer Engineering in 2000 from University of Rochester. I am currently a Principal Engineer at Intel Corporation ("Intel"), where I entered employment in 2001. My field of research has been focused on biomedical/life sciences and nanotechnology areas. I have more than 25 peer-reviewed publications in academic journals, and I have served as a reviewer for multiple academic journals.

(2) I am familiar with the subject matter and claims of the present application.

(3) I reviewed the Examiner's rejection in the Action of September 10, 2007. The Examiner rejected Claims 10-14, and 16-20 because the Examiner concluded that "the attorney's

argument that is the laser light source of '237 is used simply for detection means and cannot be used to form a gradient force optical trap is not factual evidence."

(4) The present patent application describes the invention of using a restriction barrier to hold a bead with a DNA molecule attached in a microfluidic channel for DNA sequencing, other than using optical tweezers. The interference of light caused by the optical tweezers may greatly affect the Raman spectra from the target molecule (i.e. increase the background signal). Also, the integration of optical tweezers and Raman detector is limited by the field of view when using the same microscope objective (~100 microns for a 20X objective). The optical tweezer can be used to position the bead with DNA attached upstream to the restriction barrier, but the restriction barrier itself is the physical element holding the bead in place for subsequent biochemical reactions to place (such as the exonuclease digestions).

(5) In U.S. Patent Application No. US 2003/0187237, the nucleic acid is digested into individual nucleotides, and it is these single nucleotides that flow through a packed column of metal nanoparticles. The concept here is that the nucleotides will be forced to be in close proximity to the metal nanoparticles to generate extremely large surface-enhanced Raman scattering (SERS) signal to be detected. The SERS signal is obtained through laser light exciting the surface plasmons on the metal surface, with the single nucleotide in close proximity. The reaction chamber depicted in this patent application is NOT a restriction barrier, and the angled walls are purely pictorial.

(6) It is clear that the present patent application discusses the use of a physical restriction barrier to hold a bead with a DNA molecule attached. In the '237 application, in contrast, once the appropriate biochemical reactions take place in the reaction chamber, the released single nucleotide flows into the detection area , where it can be detected using laser excitation in a packed nanoparticle chamber. The '237 simply does not teach the use of physical restriction barriers.

(7) I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed at Santa Clara, California, United States of America, on this 24th day of October 2007.

Selena Chan